

WHAT IS CLAIMED IS:

1. A power supply apparatus, comprising:

an oscillation control circuit which outputs a periodic signal having a predetermined amplitude;

a soft-start circuit which outputs a soft-start signal in which potential rises or falls gradually; and

a control signal generation circuit which generates a control signal with which to supply power supply, based on potential of the periodic signal generated by said oscillation control circuit and potential of the soft-start signal,

wherein said soft-start circuit has a clamping circuit which offsets the potential of the soft-start signal by a predetermined amount either from ground potential or from supply potential.

2. A power supply apparatus according to Claim 1, wherein the clamping circuit brings, in advance, the potential of the soft-start signal close to a minimum potential or maximum potential of the periodic signal before raising or lowering the soft-start signal.

3. A power supply apparatus according to Claim 2, wherein the clamping circuit sets, in advance, the potential of the soft-start signal substantially equal to the minimum

potential or maximum potential of the periodic signal.

4. A power supply apparatus according to Claim 2, wherein when the soft-start signal is of a rising type, the clamping circuit sets the potential of the soft-start signal equal to or slightly smaller than the minimum potential of the periodic signal before the soft-start signal rises.

5. A power supply apparatus according to Claim 2, wherein when the soft-start signal is of a falling type, the clamping circuit sets the potential of the soft-start signal equal to or slightly higher than the maximum potential of the periodic signal before the soft-start signal falls.

6. A power supply apparatus according to Claim 2, wherein the clamping circuit offsets the potential of the soft-start signal so that time delay between the timing at which the soft-start signal starts to rise or fall till the timing at which said control signal generation circuit outputs the control signal is reduced.

7. A power supply apparatus according to Claim 1, wherein the clamping circuit regulates the potential of the soft-start signal within a range where it is greater than the ground potential and less than the supply potential.

8. A power supply apparatus according to Claim 1, wherein said oscillation control circuits outputs a triangular signal or sawtooth signal.

9. A power supply apparatus according to Claim 1, wherein said control signal generation circuit is a comparator which compares the potential of the periodic signal with that of the soft-start signal.

10. A power supply apparatus according to Claim 1, wherein said power supply apparatus is integrally integrated on a single semiconductor substrate.

11. An electronic apparatus including a power supply apparatus according to Claim 1.

12. A display apparatus comprised of a light emitting element and a power supply apparatus for supplying power to the light emitting element,

said power supply apparatus including:

an oscillation control circuit which outputs a periodic signal having a predetermined amplitude;

a soft-start circuit which outputs a soft-start signal in which potential rises or falls gradually; and

a control signal generation circuit which generates a control signal with which to supply power supply to the

light emitting element, based on potential of the periodic signal generated by said oscillation control circuit and potential of the soft-start signal,

wherein the soft-start circuit has a clamping circuit which offsets the potential of the soft-start signal by a predetermined amount either from ground potential or from supply potential.